

|  |  |   |  |   |  |
|--|--|---|--|---|--|
| FORM PTO-1390<br>(REV 10-95)   |  | U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE |  | ATTORNEY'S DOCKET NUMBER<br>TPP 30422                               |  |
| TRANSMITTAL LETTER TO THE UNITED STATES<br>DESIGNATED/ELECTED OFFICE (DO/EO/US)<br>CONCERNING A FILING UNDER 35 U.S.C. 371   |  |   |  | U.S. APPLICATION NO. (If known, see 37 CFR 1.5)<br><b>08/817391</b> |  |
| INTERNATIONAL APPLICATION NO.<br>PCT/SE95/01206  |  | INTERNATIONAL FILING DATE<br>17 October 95 (17.10.95)   |  | PRIORITY DATE CLAIMED<br>04 October 94 (04.10.94)                   |  |
| TITLE OF INVENTION<br>PROCESS FOR THE PRODUCTION OF A FLOOR STRIP  |  |   |  |   |  |
| APPLICANT(S) FOR DO/EO/US<br>KORNFÄLT, Sven; BENGTSSON, Per; SJÖLIN, Hans  |  |   |  |   |  |
| Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:  |  |   |  |   |  |
| 1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371.   |  |   |  |   |  |
| 2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.  |  |   |  |   |  |
| 3. <input checked="" type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1). |  |   |  |   |  |
| 4. <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.   |  |   |  |   |  |
| 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))  |  |   |  |   |  |
| a. <input type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau).  |  |   |  |   |  |
| b. <input checked="" type="checkbox"/> has been transmitted by the International Bureau.   |  |   |  |   |  |
| c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).   |  |   |  |   |  |
| 6. <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)).   |  |   |  |   |  |
| 7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))  |  |   |  |   |  |
| a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau).   |  |   |  |   |  |
| b. <input type="checkbox"/> have been transmitted by the International Bureau.   |  |   |  |   |  |
| c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.  |  |   |  |   |  |
| d. <input checked="" type="checkbox"/> have not been made and will not be made.  |  |   |  |   |  |
| 8. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).  |  |   |  |   |  |
| 9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).   |  |   |  |   |  |
| 10. <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).  |  |   |  |   |  |
| Items 11. to 16. below concern document(s) or information included:  |  |   |  |   |  |
| 11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.  |  |   |  |   |  |
| 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.   |  |   |  |   |  |
| 13. <input checked="" type="checkbox"/> A <b>FIRST</b> preliminary amendment.  |  |   |  |   |  |
| <input type="checkbox"/> A <b>SECOND</b> or <b>SUBSEQUENT</b> preliminary amendment.   |  |   |  |   |  |
| 14. <input type="checkbox"/> A substitute specification.   |  |   |  |   |  |
| 15. <input type="checkbox"/> A change of power of attorney and/or address letter.  |  |   |  |   |  |
| 16. <input checked="" type="checkbox"/> Other items or information:  |  |   |  |   |  |
| (a) Form PCT/IB/304 - Notification Concerning Submission of Priority Documents   |  |   |  |   |  |
| (b) Form PCT/ISA/210 - International Search Report   |  |   |  |   |  |
| (c) Form PCT/IB/308  |  |   |  |   |  |
| (d) Copy of application as published (WO 96/12857)   |  |   |  |   |  |
| (e) Form PCT/IPEA/409 - International Preliminary Examination Report   |  |   |  |   |  |

Form PTO-1390 (REV 10-95) page 2 of 2

Rec'd PCT/PTO 18 APR 1997

08/817391

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Sven KORNFÄLT et al

Serial No.: National Phase Application of  
PCT/SE95/01206

Filed: April 18, 1997

For: PROCESS FOR THE PRODUCTION OF A FLOOR STRIP

**PRELIMINARY AMENDMENT**

Honorable Commissioner of  
Patents and Trademarks  
Washington, D.C. 20231

Dear Sir:

Prior to examination on the merits, please amend the above-identified application as follows.

**IN THE CLAIMS**

Claim 3, line 1, delete " or 2".

Claim 4, line 1, delete "any one of claims 1-3" and insert --claim 1--.

Claim 5, line 1, delete "any one of claims 1-4" and insert --claim 1--.

Claim 6, line 1, delete "any one of claims 1-5" and insert --claim 1--.

**REMARKS**

The foregoing Amendment is submitted to eliminate multiple claim dependencies, thereby minimizing the filing fee and to place the claims in better form for examination under U.S. practice.

Respectfully submitted,



Thomas P. Pavelko  
Registration No. 31,689

TPP:mat  
Attorney Docket No.: TPP 30422

WATSON COLE STEVENS DAVIS, P.L.L.C.  
1400 K Street, N.W., Suite 1000  
Washington, D.C. 20005-2477  
Telephone: (202) 628-0088  
Facsimile: (202) 628-8034 or (202) 628-0033

Date: March 18, 1997

68740-1627883

## PROCESS FOR THE PRODUCTION OF A FLOOR STRIP

The present invention relates to a process for the production of a floor strip such as a dilatation profile, a transition profile or a finishing profile.

It is previously known to produce floor strips such as metal strips, wood veneer coated strips and strips of homogeneous wood.

There is a strong desire to bring about a floor strip with the same pattern as on a floor of thermosetting laminate. During the last years these floors have become very usual. For instance they are made with wood pattern, marble pattern and phantasy pattern. Possibly you can use a homogeneous wood strip or a wood veneer coated strip for a few of the wood patterned floors. Previously known strips do not go well together with all the other floor patterns.

In addition the purpose of the present invention is to provide a floor strip with improved abrasion resistance.

According to the present invention it has quite surprisingly been possible to meet the above needs and bring about a process for the production of floor strips such as a dilatation profile, a transition profile or a finishing profile. The process comprises glueing, preferably under heat and pressure a thin decorative thermosetting laminate of postforming quality having an abrasion resistance measured as IP-value >3000 revolutions, preferably >6000 revolutions, on a longitudinal carrier, which carrier preferably consists of a fibre board or a particle board with a rectangular cross-section and at least two opposite rounded-off edges. The postforming laminate is glued in one piece on the upper side and two long sides of the carrier via the rounded-off edges, whereupon one or more floor profiles having the same or different cross-section is machined from the laminate coated carrier.

According to one embodiment the carrier can be provided with a rectangular cross-section with three rounded-off edges.

One great advantage of the process for the production according to the invention is that it is very rational. From the same body, the laminate clad carrier, several profiles with varying shape can be machined. Usually a milling machine is used for machining the different kinds of profiles from the laminate coated carrier.

Preferably the carrier is water resistant. At a preferred embodiment the carrier consists of a high density fibre board made of fine fibres.

At a preferred embodiment the postforming laminate is glued in one piece on three of the four longitudinal sides of the carrier, preferably on the upper side and two long sides via the rounded-off edges. Advantageously, a heat and moisture resistant glue is used at the glueing. Preferably the glueing is carried out under heat and pressure. For instance the pressure can be regulated by means of rollers which press the laminate against the carrier. The temperature can for instance be regulated with heating nozzles which can give an even current of warm air.

At another embodiment the carrier can be provided with a rectangular cross-section and three rounded-off edges. The postforming laminate is then glued in one piece on all four sides of the carrier via the rounded-off edges.

Suitably the postforming laminate consists of at least one monochromatic or patterned paper sheet impregnated with a thermosetting resin, preferably melamine-formaldehyde resin and preferably one or more sheets for instance of parchment, vulcanized fibres or glass fibres. The last mentioned sheets are preferably not impregnated with any thermosetting resin, but the thermosetting resin from the sheets situated above will enter these sheets at the laminating step, where all sheets are bonded together.

Generally the term postforming laminate means a laminate which is so flexible that it can be formed at least to a certain extent after the production thereof. Ordinary qualities of thermosetting decorative laminates are rather brittle and cannot be regarded as postforming laminates.

Usually the postforming laminate includes at least one uppermost transparent paper sheet made of  $\alpha$ -cellulose and impregnated with a thermosetting resin, preferably melamine-formaldehyde resin. This so-called overlay is intended to protect an underlying decor sheet from abrasion.

Often at least one of the paper sheets of the postforming laminate impregnated with thermosetting resin, preferably the uppermost one is coated with hard particles for instance silica, aluminium oxide and/or silicon carbide with an average particle size of about 1-80  $\mu\text{m}$ , preferably about 5-60  $\mu\text{m}$  evenly distributed over the surface of the paper sheet.

In a preferred embodiment the hard particles are applied on the resin impregnated paper surface before the resin has been dried.

The hard particles improve the abrasion resistance of the laminate. Hard particles are used in the same way at the production of laminates which are subject to a hard wear such as flooring laminates.

The abrasion resistance of the postforming laminates are tested according to the European standard EN 438-2/6:1991. According to this standard the abrasion of the decor sheet of the finished laminate to the so-called IP-point (initial point) is measured, where the starting abrasion takes place.

The IP-value suitably lies within the interval 3000-20000, preferably 3000-10000 revolutions.

Thus, the manufacturing process according to the invention makes it possible to produce laminate clad profiles with the same surface pattern and about the same abrasion resistance as the laminate floorings they are intended to go together with.

Of course the pattern of the profiles can also be adapted to other flooring materials than laminate floorings, such as parquette floorings and soft plastic floorings.

The present invention will be explained further in connection with the embodiment example below and the enclosed figures of which figure 1 shows a postforming laminate 1 glued to a longitudinal carrier 2. Figure 2 shows a dilatation profile 3 with a postforming laminate 1 glued thereto, while figure 3 illustrates a finishing profile 4 with a postforming laminate 1 glued thereto. Finally figure 4 shows a transition profile 5 with a postforming laminate 1 glued thereto.

On the figures the thickness of the postforming laminate 1 has been magnified as compared to the size of the carrier 2 and the profiles 3-5 respectively to better illustrate that a postforming laminate 1 is glued to the carrier 2 and the profiles 3-5 respectively.

Of course the figures 1-4 only show one embodiment of the carrier 2 and the profiles 3-5 respectively which can be produced according to the invention. Various other designs are possible.

### Example

A roll of transparent so-called overlay paper of  $\alpha$ -cellulose with a surface weight of 25 g/m<sup>2</sup> was impregnated with an aqueous solution of melamine-formaldehyde resin to a resin content of 70 percent by weight calculated on dry impregnated paper. Immediately after the impregnation, aluminium oxide particles with an average particle size of 50  $\mu$ m were applied to the upper side of the paper in an amount of 7 g/m<sup>2</sup> by means of a doctor-roll placed above the paper web.

Thus, the hard aluminium particles were applied in the melamine-formaldehyde resin which had not been dried yet.

The impregnated paper web was then fed continuously into a heating oven, where the solvent was evaporated. At the same time the resin was partially cured to so-called B-stage. Thereby the aluminium oxide particles were enclosed in the resin layer and accordingly concentrated to the surface of the product obtained which is usually called prepreg. The prepreg web obtained was then rolled again.

A roll of conventional nontransparent so-called decor paper with a decor pattern printed thereon and having a surface weight of 80 g/m<sup>2</sup> was treated in the same way as the overlay paper except for the fact that no aluminium oxide particles were applied and that the resin content was 50 percent by weight calculated on dry impregnated paper.

A roll of unimpregnated parchment with a surface weight of 120 g/m<sup>2</sup> was used at the production of the postforming laminate.

The two prepreg webs impregnated with melamine-formaldehyde resin and the unimpregnated parchment web were pressed between two press bands of a continuous laminating press to a decorative postforming laminate.

At the pressing a prepreg web of  $\alpha$ -cellulose was placed on top with the side with the hard particles directed upwards. Underneath followed a prepreg web of decor paper and at the bottom a web of parchment. The prepreg webs and the parchment web were pressed together at a pressure of 35 kp/cm<sup>2</sup> and at a temperature of 170°C

The decorative postforming laminate obtained was cut with roller knives to strips of suitable length and width.

A longitudinal carrier 2 with a rectangular cross-section and two opposite rounded-off edges according to figure 1 was machined from a fibre board by means of a milling machine. The fibre board was a water resistant board of so-called MDF-quality (medium density fibre board quality) of high density made of finely divided fibres.

A strip of postforming laminate 1 was glued under heat and pressure to the longitudinal carrier 2 with a heat and moisture resistant glue. The pressure was regulated with rolls which pressed the laminate against the carrier and the temperature was regulated with heating nozzles which blew an even current of warm air.

A dilation profile 3 according to figure 2 was machined from the laminate clad carrier by milling.

Instead two finishing profiles 4 according to figure 3 or one transition profile 5 according to figure 4 can be produced from the same carrier. This results in a rational and cost-saving production.

The abrasion resistance of the postforming laminate obtained was measured. Then a value for the IP-point amounting to 7000 revolutions was obtained.

The present invention is not limited to the embodiments disclosed, since these can be modified in different ways within the scope of the present invention.

2000-01-01 10:00:00



## CLAIMS

1. Process for the production of a floor strip such as a dilatation profile, a transition profile or a finishing profile, which comprises glueing preferably under heat and pressure a thin decorative thermosetting laminate of postforming quality having an abrasion resistance measured as IP-value >3000 revolutions, preferably >6000 revolutions, on a longitudinal carrier, which carrier preferably consists of a fibre board or a particle board with a rectangular cross-section and at least two opposite rounded-off edges, whereby the postforming laminate in one piece is glued on the upper side and two long sides of the carrier via the rounded-off edges, whereupon one or more floor profiles having the same or different cross-section is machined from the laminate coated carrier.
2. Process according to claim 1 wherein a water resistant carrier is used.
3. Process according to claim 1 or 2, wherein the postforming laminate consists of at least one monochromatic or patterned paper sheet impregnated with a thermosetting resin, preferably melamine-formaldehyde resin and preferably one or more sheets for instance consisting of parchment, vulcanized fibres or glass fibres which preferably are not impregnated with a thermosetting resin.
4. Process according to any one of claims 1-3, wherein the postforming laminate includes at least one uppermost transparent paper sheet, so-called overlay of  $\alpha$ -cellulose impregnated with a thermosetting resin, preferably melamine-formaldehyde resin.
5. Process according to any one of claims 1-4 wherein at least one of the paper sheets of the postforming laminate being impregnated with thermosetting resin, preferably at least the uppermost sheet is coated with hard particles for example silica, aluminium oxide and/or silicon carbide with an average particle size of 1-80  $\mu\text{m}$ , preferably about 5-60  $\mu\text{m}$  evenly distributed over the surface of the paper sheet.
6. Process according to any one of claims 1-5, wherein the IP-value lies within the interval 3000-20000 revolutions, preferably 3000-10000 revolutions.

## APPLICATION FOR UNITED STATES PATENT

## Declaration for Patent Application

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on

1 the invention entitled: PROCESS FOR THE PRODUCTION OF A FLOOR STRIP  
the specification of which 2 (file no. TPP 30422)

(check at least one) 3 ☐ is attached hereto  
4 ☐ was filed on \_\_\_\_\_ as (5) U.S. Application Serial No. \_\_\_\_\_  
5 ☐ and was amended on \_\_\_\_\_  
(if applicable)

|   |    |                                     |   |                        |
|---|----|-------------------------------------|---|------------------------|
| Use this portion only if you are entering the U.S. National phase based on a PCT International Application designating the U.S. | 7  | <input checked="" type="checkbox"/> | was filed as PCT international application                                  |                        |
|   | 8  |                                     | Number <u>PCT/SE95/01206</u>  |                        |
|   | 9  |                                     | on <u>17 October 1995</u>   |                        |
|   | 10 |                                     | and was amended under PCT Article(s) 19 and/or 34 on _____ (if applicable). |                        |
|   | 11 |                                     | priority date claimed in PCT International Application                      |                        |
|   |    | <u>Sweden</u>                       | <u>9403620-9</u>  | <u>24 October 1994</u> |
|   |    | (Country)                           | (Number)  | (Day/Month/Year Filed) |

I hereby declare that I have reviewed and understand the contents of the above identified specification, including the claims, as amended, by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me which is material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date earlier than that of the application(s) on which priority is claimed:

## Prior (Foreign) Application(s) and Priority Claims Under 35 U.S.C. 119

## Priority Claimed

|    |           |          |                        |                          |                          |
|----|-----------|----------|------------------------|--------------------------|--------------------------|
| 12 | _____     | _____    | _____                  | <input type="checkbox"/> | <input type="checkbox"/> |
|    | (Country) | (Number) | (Day/Month/Year Filed) | Yes                      | No                       |
|    | _____     | _____    | _____                  | <input type="checkbox"/> | <input type="checkbox"/> |
|    | (Country) | (Number) | (Day/Month/Year Filed) | Yes                      | No                       |

Do not use this portion to identify a PCT application if the present application is the U.S. National phase of that PCT application

13 I hereby claim the benefit under Title 35, United States Code, 120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between filing date of the prior application and the national or PCT international filing date of this application.

|                           |                    |                                       |
|---------------------------|--------------------|---------------------------------------|
| _____                     | _____              | _____                                 |
| (U.S. Application Number) | (U.S. Filing Date) | Status (patented, pending, abandoned) |

I hereby appoint the following attorneys of the firm of Watson Cole Stevens Davis, P.L.L.C. as my attorneys of record with full power of substitution and revocation to prosecute this application and to transact all business in the Patent and Trademark Office:

Robert J. Lasker, Reg. No. 22785; Lawrence R. Radanovic, Reg. No. 23077; Richard H. Tushin, Reg. No. 27297; James E. Ledbetter, Reg. No. 28732; Donald N. Huff, Reg. No. 27561; Thomas P. Pavelko, Reg. No. 31689; John P. DeLuca, Reg. No. 25505; James A. Poulos, III, Reg. No. 31714; Anthony P. Venturino, Reg. No. 31674; Walter D. Ames, Reg. No. 17913; and Ellsworth H. Mosher, Reg. No. 14717.

ALL CORRESPONDENCE IN CONNECTION WITH THIS APPLICATION SHOULD BE SENT TO  
WATSON COLE STEVENS DAVIS, P.L.L.C. 1400 K Street, N.W., Suite 1000, Washington, D.C. 20005-2477,  
TELEPHONE (202) 628-0088, FACSIMILE (202) 628-8034.

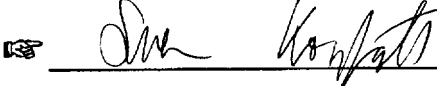
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful statements may jeopardize the validity of the application or any patent issuing thereon.

See page 2 for signature lines

WATSON COLE STEVENS DAVIS, P.L.L.C.

PAGE 2 OF U.S.A. DECLARATION FORM

**\*14a** Typewritten Full Name of Sole or First Inventor Sven KORNFÄLT **1-00**  
Given Name Middle Name Family Name

**\*15a** Inventor's Signature 


**\*16a** Date of Signature 04 08 1997  
Month Day Year

**17a** Residence Malmö SWEDEN **SEX**  
City State or Province Country

**18a** Citizenship Swedish

**19a** Post Office Address Sallerupsvägen 18, S-212-189 Malmö, Sweden  
(Insert complete mailing address, including country)

**\*14a** Typewritten Full Name of Sole or Second Inventor Per BENGTSSON **2-00**  
Given Name Middle Name Family Name

**\*15a** Inventor's Signature 

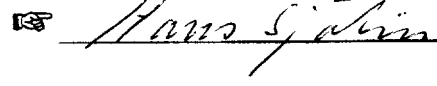
**\*16a** Date of Signature 04 08 1997  
Month Day Year

**17a** Residence Ekeby SWEDEN **SEX**  
City State or Province Country

**18a** Citizenship Swedish

**19a** Post Office Address Skolgatan 13B, S-26051 Ekeby, Sweden  
(Insert complete mailing address, including country)

**\*14a** Typewritten Full Name of Sole or Third Inventor Hans SJÖLIN **3-00**  
Given Name Middle Name Family Name

**\*15a** Inventor's Signature 

**\*16a** Date of Signature 04 08 1997  
Month Day Year

**17a** Residence Perstorp SWEDEN **SEX**  
City State or Province Country

**18a** Citizenship Swedish

**19a** Post Office Address Klockarevägen 5, S-284 33 Perstorp, Sweden  
(Insert complete mailing address, including country)

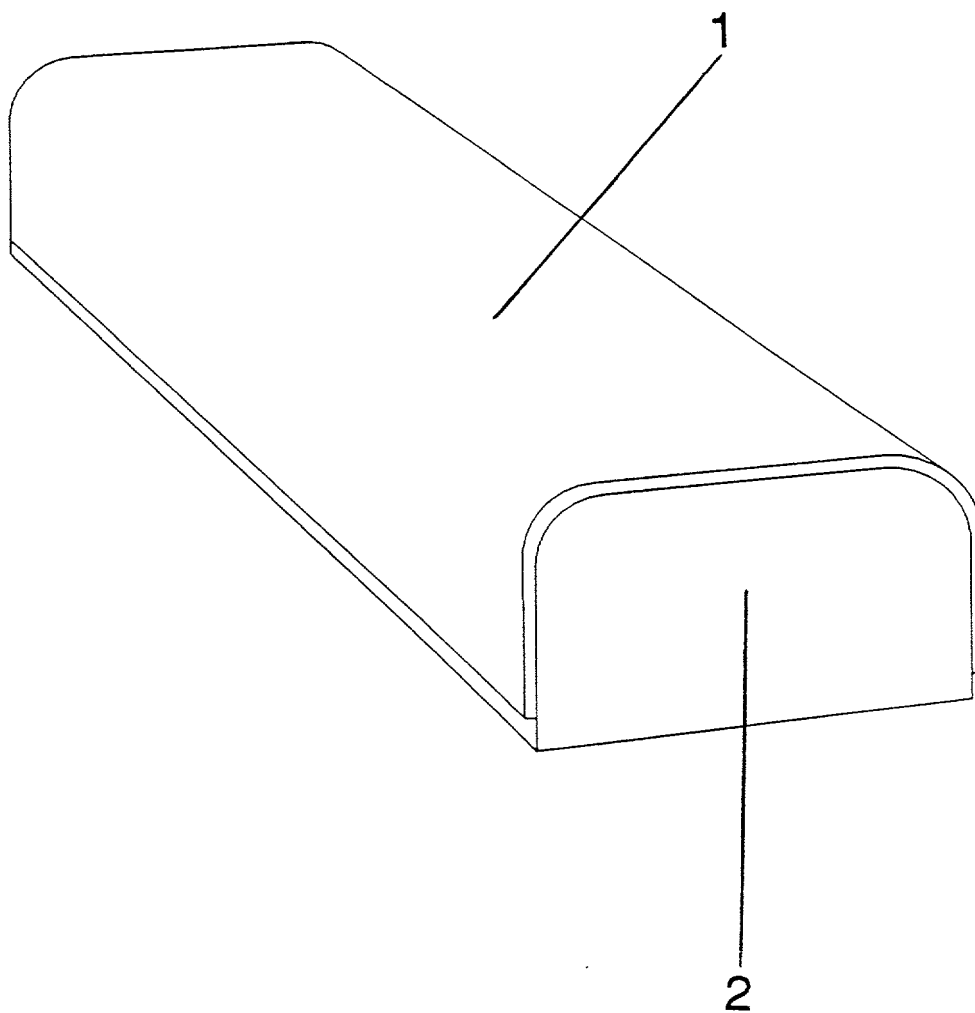
252440 FEB 27 1998

8/817391

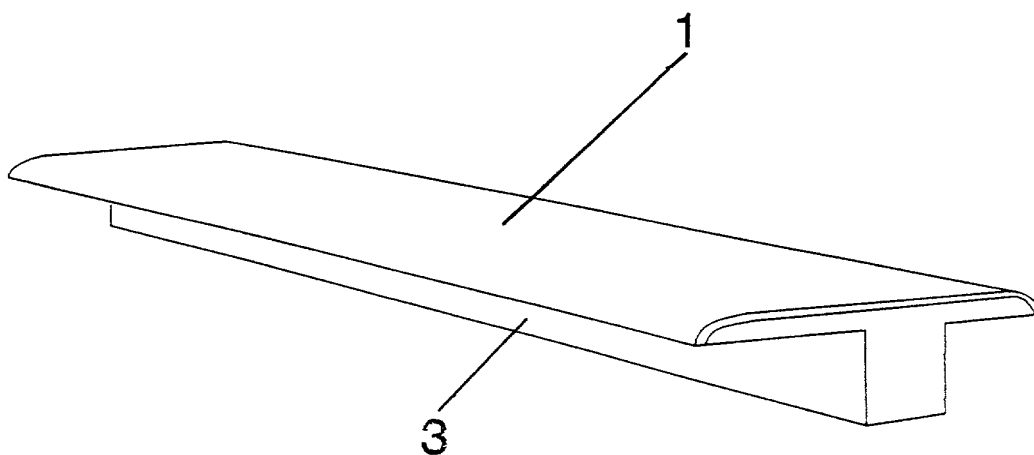
Fig. 1

|           |                    |
|-----------|--------------------|
| APPROVED  | U.G. FIG.          |
| BY        | CLASS / INCL / ASS |
| DRAFTSMAN |                    |

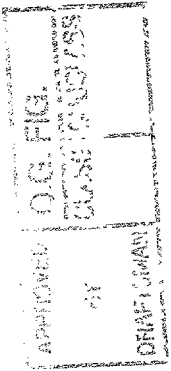
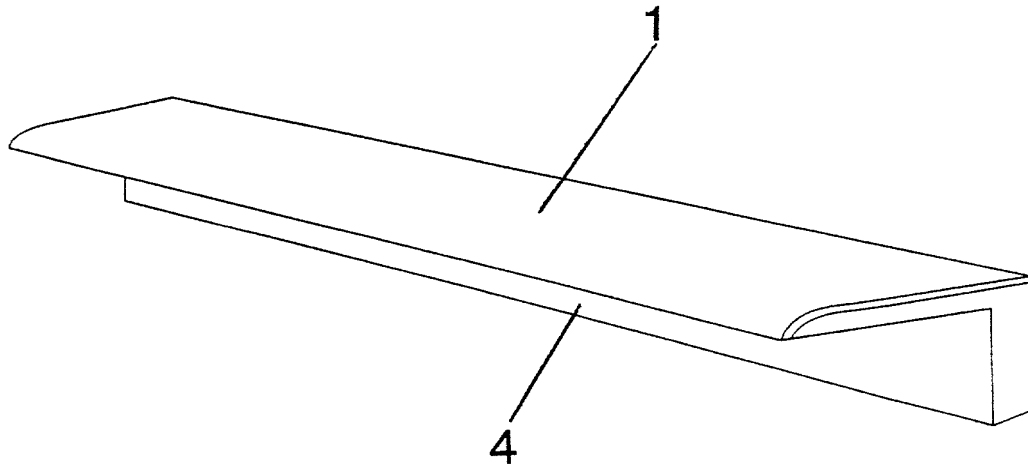
663440" T65 L T630



### Fig. 2



**Fig. 3**



4433740 75527320

|           |                 |
|-----------|-----------------|
| APPROVED  | O. G. FIG.      |
| BY        | CLASS / SUBJECT |
| DRAFTSMAN |                 |